

# I-Chao Shen

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## Research Interests

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Computer graphics, vector graphics, data-driven 2D/3D geometry analysis and processing, machine learning.

## Education

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**National Taiwan University** **Taipei, Taiwan**  
*Ph.D. in Computer Science* *Sep 2017 - Dec. 2020*

Advisor: Bing-Yu Chen.

Thesis: 2D Visual Content Design Driven by Human-Guided Optimization

**National Taiwan University** **Taipei, Taiwan**  
*Master in Information Management and MBA* *Sep 2009 - June 2011*

Advisor: Bing-Yu Chen.

Thesis: Perspective-aware Warping for Seamless Stereoscopic Image Cloning

**National Taiwan University** **Taipei, Taiwan**  
*Bachelor in Information Management* *Sep 2005 - June 2009*

## Experiences

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**Assistant Professor**, Tokyo, Japan *Apr. 2023 -*  
Dept. of Computer Science, The University of Tokyo

**Project Assistant Professor**, Tokyo, Japan *Sep. 2022 - Mar. 2023*  
Dept. of Creative Informatics, The University of Tokyo

**Postdoctoral researcher - JSPS Foreign Researchers Fellowship**, Tokyo, Japan *Dec. 2020 - Aug. 2022*  
Host : Takeo Igarashi

**Research Visitor - JST CREST Project**, Tokyo, Japan *Feb 2018 - July 2018, Aug 2019*  
Supervisor : Takeo Igarashi

**Research Assistant - CMLab, National Taiwan University**, Taipei, Taiwan *Apr 2017 - July 2017*  
Supervisor : Bing-Yu Chen

**Research Assistant - Imager Lab, The University of British Columbia**,  
Vancouver, Canada *Sep 2014 - Mar 2017*  
Supervisor : Alla Sheffer

**Research Intern - Imagination Lab, Adobe Research**, San Jose, CA *May 2015 - Aug 2015*  
Supervisor : Nathan Carr, Duygu Ceylan, Zhaowen Wang

**Research Assistant - CITI, Academia Sinica**, Taipei, Taiwan *Sep 2011 - July 2014*  
Supervisor : Wen-Huang Cheng

## Publications

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**AutoSketch: VLM-assisted Style-Aware Vector Sketch Completion**  
Hsiao-Yuan Chin\*, I-Chao Shen\*, Yi-Ting Chiu, Ariel Shamir, Bing-Yu Chen (\*: joint first authors)  
Conditionally accept to SIGGRAPH ASIA 2025 (conference track) ([arxiv:2502.06860](https://arxiv.org/abs/2502.06860))

**LayoutRectifier: An Optimization-based Post-processing for Graphic Design Layout Generation**  
I-Chao Shen, Ariel Shamir, Takeo Igarashi  
Pacific Graphics 2025 (Journal track)

**Real-Time Per-Garment Virtual Try-On with Temporal Consistency for Loose-Fitting Garments**

Zaiqiang Wu, [I-Chao Shen](#), Takeo Igarashi  
Pacific Graphics 2025 (Journal track)

**MeshLLM: Empowering Large Language Models to Progressively Understand and Generate 3D Mesh**

Shuangkang Fang, [I-Chao Shen](#), Yufeng Wang, Yi-Hsuan Tsai, Yi Yang, Shuchang Zhou, Wenrui Ding, Takeo Igarashi, Ming-Hsuan Yang  
ICCV 2025 (Highlight, top 3%-5%)

**NeRF Is a Valuable Assistant for 3D Gaussian Splatting**

Shuangkang Fang, [I-Chao Shen](#), Takeo Igarashi, Yufeng Wang, ZeSheng Wang, Yi Yang, Wenrui Ding, Shuchang Zhou  
ICCV 2025

**GarmentImage: Raster Encoding of Garment Sewing Patterns with Diverse Topologies**

Yuki Tatsukawa, Anran Qi, [I-Chao Shen](#), Takeo Igarashi  
SIGGRAPH 2025 (Conference Track)

**The Mokume Dataset and Inverse Modeling of Solid Wood Textures**

Maria Larsson, Hodaka Yamaguchi, Ehsan Pajouheshgar, [I-Chao Shen](#), Kenji Tojo, Chia-Ming Chang, Lars Hansson, Olof Broman, Takashi Ijiri, Ariel Shamir, Wenzel Jakob, Takeo Igarashi  
SIGGRAPH 2025 (Transaction on Graphics)

**FontCraft: Multimodal Font Design Using Interactive Bayesian Optimization**

Yuki Tatsukawa, [I-Chao Shen](#), Mustafa Doga Dogan, Anran Qi, Yuki Koyama, Ariel Shamir, Takeo Igarashi  
CHI 2025

**CompAct: Designing Interconnected Compliant Mechanisms with Active Material Integration**

Humphrey Yang, [I-Chao Shen](#), Nikolas Martelaro, Bo Zhu, Haoran Xie, Takeo Igarashi, Lining Yao  
CHI 2025

**Approximating Procedural Models of 3D Shapes with Neural Networks**

Ishtiaque Hossain, [I-Chao Shen](#), Oliver van Kaick  
Eurographics 2025

**Interactive Multilayer Gaussian Garments for Low-Cost Try-On**

Ryan Zesch, [I-Chao Shen](#), Haoran Xie, Bo Zhu, Shinjiro Sueda, Takeo Igarashi  
Graphics Interface (GI) 2025

**FontCLIP: A Semantic Typography Visual-Language Model for Multilingual Font Applications**

Yuki Tatsukawa, [I-Chao Shen](#), Anran Qi, Yuki Koyama, Takeo Igarashi, Ariel Shamir  
Eurographics 2024

**Learned Inference of Annual Ring Pattern of Solid Wood**

Maria Larsson\*, Takashi Ijiri\*, [I-Chao Shen](#), Hironori Yoshida, Ariel Shamir, Takeo Igarashi (\*: joint first authors)  
Computer Graphics Forum 2024

**Virtual Measurement Garment for Per-Garment Virtual Try-On**

Zaiqiang Wu, Jingyuan Liu, Long Hin Toby Chong, [I-Chao Shen](#), Takeo Igarashi  
Graphics Interface 2024

**Improving Cache Placement for Efficient Cache-based Rendering**

Yu-Ting Wu, [I-Chao Shen](#)  
The Visual Computer 2024

**StylePart: Image-based Shape Part Manipulation**

[I-Chao Shen](#), Li-Wen Su, Yu-Ting Wu, Bing-Yu Chen  
The Visual Computer 2024

**NeRF-In: Free-Form NeRF Inpainting with RGB-D Priors**

I-Chao Shen<sup>\*</sup>, Hao-Kang Liu<sup>\*</sup>, Bing-Yu Chen (<sup>\*</sup>: joint first authors)

IEEE Computer Graphics and Applications (CG&A) 2023

**Palette-Based and Harmony-Guided Colorization for Vector Icons**

Miao Lin<sup>\*</sup>, I-Chao Shen<sup>\*</sup>, Hsiao-Yuan Chin, Ruo-Xi Chen, Bing-Yu Chen (<sup>\*</sup>: joint first authors)

Computer Graphics Forum (Proceeding of Pacific Graphics 2023)

**Data-guided Authoring of Procedural Models of Shapes**

Ishtiaque Hossain, I-Chao Shen, Takeo Igarashi, Oliver van Kaick

Computer Graphics Forum (Proceeding of Pacific Graphics 2023)

**EvIcon: Designing High-Usability Icon with Human-in-the-loop Exploration and IconCLIP**

I-Chao Shen, Fu-Yin Cherng, Takeo Igarashi, Wen-Chieh Lin, Bing-Yu Cheng

Computer Graphics Forum Volume 42, Issue 6, September 2023

**360MVSNet: Deep Multi-view Stereo Network with 360° Images for Indoor Scene Reconstruction**

Ching-Ya Chiu, Yu-Ting Wu, I-Chao Shen, Yung-Yu Chuang

IEEE/CVF Winter Conference on Applications of Computer Vision (WACV) 2023 (Algorithm Track)

**ClipGen: A Deep Generative Model for Clipart Vectorization and Synthesis**

I-Chao Shen, Bing-Yu Chen

IEEE Transactions on Visualization and Computer Graphics (TVCG), pp. 4211-4224, vol. 28, Dec. 2022

**StyleFaceUV: a 3D Face UV Map Generator for View-Consistent Face Image Synthesis**

Wei-Chieh Chung, Jian-Kai Zhu, I-Chao Shen, Yu-Ting Wu, Yung-Yu Chuang

The British Machine Vision Conference (BMVC) 2022

**ODEN: Live Programming for Neural Network Architecture Editing**

Chunqi Zhao, I-Chao Shen, Tsukasa Fukusato, Jun Kato, Takeo Igarashi

Proceeding of ACM Intelligent User Interfaces (IUI) 2022

**Per Garment Capture and Synthesis for Real-time Virtual Try-on**

Toby Chong, I-Chao Shen, Nobuyuki Umetani, Takeo Igarashi

Proceeding of User Interface Software and Technology (UIST) 2021

**Data-driven Sketch Beautification with Neural Feature Representation**

I-Chao Shen

IEEE Computer Graphics and Applications (CG&A) 2021

**Multi-Resolution Shared Representative Filtering for Real-Time Depth Completion**

Yu-Ting Wu, Tzu-Mao Li, I-Chao Shen, Hong-Shiang Lin, Yung-Yu Chuang

High-Performance Graphics (HPG) 2021

**ClipFlip : Multi-view Clipart Design**

I-Chao Shen, Kuan-Hung Liu, Li-Wen Su, Yu-Ting Wu, and Bing-Yu Chen

Computer Graphics Forum, Volume 40, Issue 1, Feb 2021, arXiv:2008.12933 [cs.GR]

**Interactive Optimization of Generative Image Modeling using Sequential Subspace Search and Content-based Guidance**

Toby Chong Long Hin<sup>\*</sup>, I-Chao Shen<sup>\*</sup>, Issei Sato, and Takeo Igarashi (<sup>\*</sup>: joint first authors)

Computer Graphics Forum, Volume 40, Issue 1, Feb 2021, arXiv:1906.09840 [cs.GR]

**ZomeFab: Cost-effective Hybrid Fabrication with Zometools**

I-Chao Shen, Ming-Shiuan Chen, Chun-Kai Huang, and Bing-Yu Chen

Computer Graphics Forum, Volume 39, Issue 1, Feb 2020

**Director-360: Introducing Camera Handling to 360 Cameras**

Hao-Juan Huang, I-Chao Shen, and Liwei Chan

in proceeding of MobileHCI 2020

**Perception-Driven Semi-Structured Boundary Vectorization**

Shayan Hoshyari, Edoardo Dominici, Alla Sheffer, Nathan Carr, Duygu Ceylan, Zhaowen Wang, [I-Chao Shen](#)  
ACM Transactions on Graphics (Proceedings of SIGGRAPH 2018).

**High-resolution 360 Video Foveated Stitching for Real-time VR**

Wei-Tse Lee\*, Hsin-I Chen\*, Ming-Shiuan Chen, [I-Chao Shen](#) and Bing-Yu Chen  
Computer Graphics Forum (Proceedings of Pacific Graphics 2017)

**A Scalable Active Framework for Region Annotation in 3D Shape Collections**

Li Yi, Vladimir G. Kim, Duygu Ceylan, [I-Chao Shen](#), Mengyan Yan, Hao Su, Cewu Lu, Qixing Huang, Alla Sheffer, and Leonidas Guibas  
ACM Transactions on Graphics (Proceedings of SIGGRAPH Asia 2016)

**Retargeting 3D Objects and Scenes with a General Framework**

Chun-Kai Huang, Yi-Ling Chen, [I-Chao Shen](#), and Bing-Yu Chen  
Computer Graphics Forum (Proceedings of Pacific Graphics 2016)

**Data-driven Handwriting Synthesis in a Conjoined Manner**

Hsin-Yi Chen, Tse-Ju Lin, [I-Chao Shen](#), and Bing-Yu Chen  
Computer Graphics Forum (Proceedings of Pacific Graphics 2015)

**Gestalt Rule Feature Points**

[I-Chao Shen](#) and Wen-Huang Cheng  
IEEE Transactions on Multimedia (TMM), 17(4), pp. 526-537, 2015

**Geometrically Consistent Stereoscopic Image Editing using Patch-based Synthesis**

Sheng-Jie Luo, Ying-Tse Sun, [I-Chao Shen](#), Bing-Yu Chen, and Yung-Yu Chuang  
IEEE Transactions on Visualization and Computer Graphics (TVCG), 21(1), pp. 56-67, 2015

**Stroke-guided Image Synthesis for Skeletal Structure Editing**

Sheng-Jie Luo, Chin-Yu Lin, [I-Chao Shen](#), and Bing-Yu Chen  
Computer Graphics Forum (Proceedings of Pacific Graphics 2013)

**Perspective-Aware Warping for Seamless Stereoscopic Image Cloning**

Sheng-Jie Luo, [I-Chao Shen](#), Bing-Yu Chen, Wen-Huang Cheng, and Yung-Yu Chuang  
ACM Transactions on Graphics (Proceedings of SIGGRAPH Asia 2012).

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**Technical Reports and Preprints****Axis-Aligned Document Dewarping**

Chaoyun Wang, [I-Chao Shen](#), Takeo Igarashi, Nanning Zheng, Caigui Jiang  
arxiv preprint ([arxiv:2507.15000](#))

**Low-Barrier Dataset Collection with Real Human Body for Interactive Per-Garment Virtual Try-On**

Zaiqiang Wu, Yechen Li, Jingyuan Liu, Yuki Shibata, Takayuki Hori, [I-Chao Shen](#), Takeo Igarashi  
arxiv preprint ([arxiv:2506.10468](#))

**AvatarPerfect: User-Assisted 3D Gaussian Splatting Avatar Refinement with Automatic Pose Suggestion**

Jotaro Sakamiya, [I-Chao Shen](#), Jinsong Zhang, Mustafa Doga Dogan, Takeo Igarashi  
arxiv preprint ([arxiv:2412.1560](#))

**AutoPoly: Predicting an Artist-Compatible Polygonal Mesh Construction Sequence from a Silhouette Image**

[I-Chao Shen](#), Yu Ju Chen, Oliver van Kaick, Takeo Igarashi  
arxiv preprint ([arxiv:2203.15233](#))

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**Workshop Papers, Short Papers, Posters**

**Designing Reconfigurable Joints**

Atsushi Maruyama, Maria Larsson, [I-Chao Shen](#), Takeo Igarashi  
SIGGRAPH ASIA 2024 Technical Communication (Honorable Mention Award)

**DualAvatar: Robust Gaussian Splatting Avatar with Dual Representation**

Jinsong Zhang, [I-Chao Shen](#), Jotaro Sakamiya, Yu-Kun Lai, Takeo Igarashi, Kun Li  
SIGGRAPH ASIA 2024 Poster Program

**Generating Font Variations Using Latent Space Trajectory**

Sotaro Kanazawa, [I-Chao Shen](#), Yuki Tatsukawa, Takeo Igarashi  
SIGGRAPH ASIA 2024 Poster Program

**3D Reconstruction from Sketch with Hidden Lines by Two-Branch Diffusion Model**

Yuta Fukushima, Anran Qi, [I-Chao Shen](#), Yulia Gryaditskaya, Takeo Igarashi  
Eurographics 2024 Short Paper

**MicroGlam: Microscopic Skin Image Dataset with Cosmetics**

Toby Chong, Alina Chadwick, [I-Chao Shen](#), Haoran Xie, Takeo Igarashi  
SIGGRAPH ASIA 2023 Technical Communication

**Computational Design of Nebuta-like Paper-on-Wire Artworks**

Naoki Agata, Anran Qi, Yuta Noma, [I-Chao Shen](#), Takeo Igarashi  
SIGGRAPH 2023 Poster Program

**Palette-Based Colorization for Vector Icons**

Miao Lin, [I-Chao Shen](#), Hsiao-Yuan Chin, Ruo-Xi Chen, Bing-Yu Chen  
SIGGRAPH 2023 Poster Program

**OVERPAINT: Automatic Multi-Layer Stencil Generation without Bridges**

Yuta Fukushima, Anran Qi, [I-Chao Shen](#), Takeo Igarashi  
SIGGRAPH ASIA 2022 Technical Communication

**Guided Image Weathering using Image-to-Image Translation**

Li-Yu Chen, [I-Chao Shen](#), and Bing-Yu Chen  
SIGGRAPH ASIA 2021 Technical Communication

**Real-time Image-based Virtual Try-on with Measurement Garment**

Toby Chong, [I-Chao Shen](#), Yunfei Qian, Nobuyuki Umetani, Takeo Igarashi  
SIGGRAPH ASIA 2021 Emerging Technologies

**Transferring Deep Reinforcement Learning with Adversarial Objective and Augmentation**

[I-Chao Shen](#), Shu-Hsuan Hsu, and Bing-Yu Chen  
IJCAI-PRICAI 2020 Workshop on Knowledge-Based Reinforcement Learning (KBRL)

**Large-scale fabrication with interior zometool structure**

Ming-Shiuan Chen, [I-Chao Shen](#), Chun-Kai Huang, and Bing-Yu Chen  
ACM SIGGRAPH Poster Program 2018

**A Deep Learning Based Method For 3D Human Pose Estimation From 2D Fisheye Images**

Ching-Chun Chen, Chia-Min Wu, [I-Chao Shen](#), and Bing-Yu Chen.  
ACM IUI Poster Program 2018

**Retargeting 3D objects and scenes**

Chun-Kai Huang, Yi-Ling Chen, [I-Chao Shen](#), and Bing-Yu Chen  
ACM SIGGRAPH Poster Program 2015

**Painting Photolization**

Chien-Wen Jung, [I-Chao Shen](#), Sheng-Jie Luo, Bing-Yu Chen, and Wen-Huang Cheng  
ACM SIGGRAPH ASIA Poster Program 2013

**Texturing and Deforming Meshes with Casual Images**

[I-Chao Shen](#), Yi-Hua Wang, Yu-Mei Chen, Bing-Yu Chen, and Wen-Huang Cheng

ACM SIGGRAPH ASIA Poster Program 2012

**User-Assisted Disparity Maps**

Hsin-Yi Chen, Yi-Shan Lin, [I-Chao Shen](#), Sheng-Jie Luo, Wen-Huang Cheng and Bing-Yu Chen

Pacific Graphics 2012 short paper

**MusicSpace: You “Play” The Music**

Chun-Yu Tsai, Hung-Jung Lin, Tzu-Hao Kuo, Kai-Yin Cheng, [I-Chao Shen](#) Bing-Yu Chen, and Rung-Huei Liang

ACM SIGGRAPH Poster Program 2010

## Patent

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**Smoothing images using machine learning**

Nathan A Carr, Zhaowen Wang, Duygu Ceylan, [I-Chao Shen](#)

United States Patent, No. 9799102, issued October 24, 2017.

## Grants

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UTokyo x Google, AI for Science and Society, PI, Japan 2025-2026

NII Open Collaborative Research, PI, Japan [\[Link\]](#) 2025 - 2026

JSPS Kakenhi Grant-in-Aid for Young Scientists, PI, Japan [\[Link\]](#) 2023 - 2028

AIP Challenge Researcher, Japan Science and Technology Agency (JST), PI, Japan [\[Link\]](#) 2021 - 2022

JSPS Grant-in-Aid for Scientific Research for JPSP foreign fellow, Co-PI, Japan [\[Link\]](#) 2021 - 2023

## Honors

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IPPR Best Ph.D. dissertation award, Honorable mention 2021

JSPS Postdoctoral Fellowship for Foreign Researchers 2020 - 2022

MediaTek Fellowship 2017 - 2020

## Invited Talks

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Tailored Computational Visual Content Creation, Mar. 2024  
*ISID (International Symposium on Intelligence Design) 2024*

Tailored Computational Visual Content Creation, Feb. 2024  
*BAI Research Seminar, Institute for AI and Beyond, The University of Tokyo*

Computer Graphics around you everyday and how to become a Computer Graphics researcher, July. 2022  
*Chikushigaoka High School, Fukuoka, Japan*

Computer Graphics around you everyday and how to become a Computer Graphics researcher, July. 2022  
*Tokyo Metropolitan Tama High School of Science and Technology, Tokyo, Japan*  
JSPS science dialogue program

Per Garment Capture and Synthesis for Real-time Virtual Try-on, Sep. 2021  
*JST CREST 8th Research Area Meeting*

2D Visual Content Design Driven by Human-Guided Optimization, Apr. 2021  
*The University of Tokyo, Tokyo, Japan*

## Media

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**Per Garment Capture and Synthesis for Real-time Virtual Try-on** 2021, 2022

- BS フジ - ガリレオ X 第 259 回「現<sup>①</sup>空間 × ②想空間二つの世界を重ねる最新技術」(JP)

- JST News

- NIKKEI (JP)
- ZAIKEI (JP)
- TechCrunch Japan (JP)
- Tii 技術情報 (JP)
- Independent TV (UK)

## Professional Services

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- **Technical Paper Committee and others:**
  - SIGGRAPH ASIA Technical Papers Committee (2025) [[link](#)]
  - Pacific Graphics Program Committee (2025) [[link](#)]
  - Eurographics Short Papers International Program Committee (IPC) (2025) [[link](#)]
  - SIGGRAPH Technical Papers COI Coordinator (2025) [[link](#)]
  - SIGGRAPH ASIA Technical Papers Committee (2024) [[link](#)]
  - AAAI (2023 [[link](#)], 2024 [[link](#)], 2025 [[link](#)])
- **Reviewer:**
  - SIGGRAPH, SIGGRAPH ASIA
  - NeurIPS, ICLR, ICML
  - Eurographics
  - CHI
  - Pacific Graphics
  - WACV
  - BMVC
  - Transaction on Multimedia (TMM)
  - Transaction on Visualization and Computer Graphics (TVCG)

## References

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### Takeo Igarashi

Professor, Department of Computer Science and Graduate School of Information Science and Technology, The University of Tokyo, Japan

**Email:** [takeo@acm.org](mailto:takeo@acm.org)

### Bing-Yu Chen

Professor in Department of Computer Science and Engineering / Information Management, National Taiwan University

**Email:** [robin@ntu.edu.tw](mailto:robin@ntu.edu.tw)

### Ariel Shamir

Professor in Efi Arazi School of Computer Science , Reichman University

**Email:** [arik@runi.ac.il](mailto:arik@runi.ac.il)

### Yung-Yu Chuang

Professor in Department of Computer Science and Engineering, National Taiwan University

**Email:** [cyy@csie.ntu.edu.tw](mailto:cyy@csie.ntu.edu.tw)